# 2010 Wisconsin Energy Independent Community Partnership

25 x 25 Plan for Energy Independence

Report completed by:

Lac du Flambeau Band of Lake Superior Chippewa Indians





# **Table of Contents**

Overview	3
Vhat was measured? Why?	4
Discoveries/Surprises	. 6
otal Projects Considered	. 7
Pathways to 25 x 25	. 9
Projects Selected	11
Potential Renewable Feedstocks	. 15
existing Unknowns – Necessary Information for Future	16
Action Steps – Immediate & Long - Term	. 17
nergy Independence Team Members	19
Appendix – Baseline Energy Consumption Data – Spreadsheets	

# **Overview**

The Lac du Flambeau Band of Lake Superior Chippewa Indians (hereafter referred to as "the Tribe") is a federally recognized Indian Tribe with a Tribal Government operating under a Constitution adopted pursuant to Section 16 of the Indian Reorganization Act, 25 U.S.C., s. 476. The Lac du Flambeau Reservation is a rural community in north-central Wisconsin that consists of approximately 86,500 acres of forested uplands, wetlands, lakes and rivers. The above resources are utilized by the Tribe to provide cultural, subsistence, recreational and economic opportunities for the tribal membership. The Reservation is a checkerboard reservation with Tribal (45.4%), Tribal Allotted (21.4%) and Fee (33.1 %) lands. The total number of Tribal members is currently estimated to be 3,415 individuals, including 1,800 living on the Reservation. Article 6(1) a of the Tribe's Constitution and By Laws, which was duly approved by the Secretary of Interior on August 15, 1936, states that the Lac du Flambeau Tribal Council has the power and duty "to regulate the use and deposition of tribal property, to protect and preserve the tribal property, wildlife and natural resources of the Lac du Flambeau Band of Lake Superior Chippewa Indians, to cultivate Indian arts, crafts, and culture, to administer charity, and to protect the health, security and general welfare of the Tribe".

Through its sovereign government authority the Lac du Flambeau Tribe has developed a comprehensive Natural Resource Department and an Integrated Resource Management Plan (IRMP) in order to protect, conserve and enhance natural resources for present and future generations. Adopted to as a part of the Tribe's IRMP is a Strategic Energy Plan approved by the Tribal Council in November of 2009. The energy plan is a holistic document that aims to address the Tribe's energy situation with the following vision:

"The Lac du Flambeau Tribe will commit to utilize local energy resources that reduce the environmental and financial costs of energy use to ultimately gain Tribal energy independence."

Within the Strategic Energy Plan is an overview of the Tribe's current energy situation and energy program efforts, as well as detailed issues and concerns, opportunities, goals and objectives, and alternatives for moving forward. One of the specific goals included in the preferred alternative of the plan is "*To obtain 25% of LdF energy sources from renewable resources by 2025, and develop a 25x25 plan"*.

An excellent opportunity to works towards accomplishment of this goal came when the Wisconsin Office of Energy Independence solicited a request for applications from Wisconsin communities for receiving financial assistance to develop a 25x25 Plan for Energy Independence. The Lac du Flambeau Tribe is proud to have had this opportunity, and to develop its 25x25 energy plan.

# What was measured? Why?

In order to develop a plan to obtain 25% of the Tribe's energy from renewable resources, it was necessary to accurately define what constitutes energy used by the Tribe. The Lac du Flambeau Tribe is somewhat of a unique "local" government because not only does it contain a large variety of facilities for the operation of the Tribal Government, the Tribe also owns and operates a variety of businesses on the Lac du Flambeau Reservation including a 150,000 square foot Lake of the Torches Resort Casino complex, a grocery store and gas station, Simpson Electric Company that contains two facilities that manufactures electric meters, a large fish hatchery facilities and associated operations, a museum, and other various enterprises. The Tribe also owns and operates its own Water & Sewer utility that includes multiple facilities associated with its operation. All of these government and business facilities (total of 56) were included in what was defined as the Tribe's energy use.

Also underneath the operation of the Tribal Government is the Chippewa Housing Authority (CHA). The CHA is an entity designated by the Tribe to administer and operate various residential facilities including various multi-family facilities, and hundreds of single family homes that are all rented to Lac du Flambeau Tribal members. These housing facilities were also identified as being central to the Tribe's government operation, and the energy used by the operation of the CHA was included as Tribal energy use. Within the CHA operation, there are a number of facilities where electrical and thermal energy is obtained by the tenants themselves. This energy use information would not be available for this project, and was not included in what was defined as the Tribe's energy use.

For the facilities mentioned above, there are back-up generators located and used at a variety of buildings. The fuel used for the operation of these generators was also included in what was defined as the Tribe's energy use.

There also exists a significant fleet of vehicles associated with Tribal operations. Included at the time of this project were 81 on-road vehicles, as well as dozens of off-road vehicles, equipment, and boats that are used by Tribal operations. The fuels associated with the entire Tribal fleet and equipment was included in what was defined as Tribal energy use.

Also located within the boundaries of the Lac du Flambeau Reservation is the Lac du Flambeau Public School. Although this facility is not owned and operated by the Tribe, the operation of the facility is obviously essential to the community and Tribe, and will continue to be as the Tribe works towards energy independence. The energy used by the Lac du Flambeau Public School was included in what was defined as Tribal energy use.

The Lac du Flambeau Reservation obtains all of its grid-purchased electricity from the private distribution utility, Wisconsin Public Service Corporation (WPS). WPS worked as a partner on this project by providing historical electricity records for all of the included facilities and operations for the years 2007, 2008, and 2009 in order to help establish a baseline of Tribal energy use.

Natural gas lines do not feed any of the facilities that were included in what was defined as Tribal energy use, but rather the Tribe's gets thermal energy from propane that is delivered and stored on site at each facility. Propane is acquired from various providers within and around the Lac du Flambeau Reservation. The propane gallons delivered to the included facilities were gathered by obtaining records from the various propane providers, as well as from internal accounting from the Tribe. This information was gathered and compiled for the years 2007, 2008, and 2009 for inclusion in the establishment of the baseline of Tribal energy use

The fuels used by the Tribal fleet of vehicles and equipment were also obtained for the years 2007, 2008, and 2009. The majority of the Tribe's vehicle fleet obtains their fuel from the Lac du Flambeau gas station. The Tribal Police and Tribal Roads department have their own fueling station. The Tribal fleet fuel use data was also obtained and compiled for the years 2007, 2008, and 2009 from the Tribe's internal accounting department, as well as from fuel providers. The fleet fuel totals were included in the establishment of the Tribal baseline of energy use.

In order to have a means to measure the Tribe's progress towards reaching a goal of obtaining 25% of energy from renewable resources by 2025, the Tribe had to establish a baseline of their current energy use. By taking the average for the years 2007, 2008, and 2009 of all of the energy that was defined as Tribal energy use, this baseline was established.

The average of the three years compiled for the baseline was 10,410,856 kilowatt hours of electricity, 283,862 gallons of propane, 72,084 gallons of unleaded fuel, and 13,902 gallons of diesel fuel. These totals were then all converted to million (MM) Btus in order to have the baseline units consistent for comparison. The baseline total for Lac du Flambeau Tribal energy use was determined to be 72,394 MMBtus. With a 0% energy growth rate determined for the Lac du Flambeau Tribe, the Tribe would need to have 18,099 MMBtus of energy come from renewable resources by 2025 in order to reach the 25x25 goal.

# **Discoveries/Surprises**

There were many discoveries and surprises associated with completing this project. The first and possibly the most significant being the time commitment associated with the compilation of all the energy data needed for the calculation of the Lac du Flambeau energy baseline. As stated in the previous section, the energy data was obtained from a variety of different sources, in cooperation with a variety of different organizations and businesses. This process turned out to be very challenging due to a variety of reasons. It was discovered that in order to effectively compile this information, there needs to be an improvement to how this information is kept by the Tribe.

Another significant discovery during this process is simply the large amount of energy used by the Tribe and certain facilities or operations. There were a number of facilities that had very significant electricity uses (i.e. Lake of the Torches Casino, Ojibwe Market, and the Fish Hatchery), and there were also facilities that use an excessive amount of propane for heating (i.e. Simpson Electric Plastics Plant).

The sheer amount of exterior lighting operated by the Tribe was also a discovery. The lighting for roads and public areas in Lac du Flambeau was found to be a very significant energy user and cost for the Tribe. The energy for this essential function had never been summarized and compiled together and was a surprise to see the amount of lighting that Tribe uses and pays for.

As a part of the execution of this project, there were a number of different opportunities for the public to be engaged in this process. One very positive discovery was the amount of community enthusiasm for addressing the energy situation of the community, and for this project of developing renewable energy and energy independence. Concerned tribal and community members showed a great deal of support for these energy initiatives. The positive support was beyond what was initially expected, and turned out to be a very positive discovery.

The last major surprise was associated with the baseline of energy use, and the amount of renewable energy needed to have to reach 25% of the Tribe's energy. With over 18,000 MMBtus being 25% of the Tribe's energy use, the challenge to be 25x25 was discovered to be very significant. The amount of renewable energy projects that will need to be deployed to total an annual output of 18,000 MMBtus will be challenging to accomplish, and 15 years is an aggressive time frame to reach this noble goal. Although the magnitude was somewhat of a surprise, the challenge is welcomed by the Tribe in order to achieve its energy vision.

# **Total Projects Considered**

The Lac du Flambeau Tribe is taking a very holistic approach to reaching the goal of 25x25. The combination of improving the Tribe's energy use efficiency and deploying the most effective and affordable renewable energy systems will reach the goal in the most feasible and achievable manner. It has long been a priority of the Tribe to develop plans that are realistic and attainable, and this plan for energy independence is no exception.

As a part of compiling the Tribe's energy baseline, there were many obvious areas where energy use efficiency can be improved. Some of the Tribal facilities have been determined to be past their age of efficient operation and in very poor condition. The demolition or elimination of certain Tribal buildings was considered not only as a means for improving on energy use, but also as a part of projects most likely to happen for other reasons. Specific energy efficiency upgrades and weatherization upgrades to facilities themselves, or the systems that operate within facilities were also considered in a holistic manner to improving the Tribe's energy use efficiency.

In regards to renewable energy projects, many different options were taken into consideration. It is important to note that the Lac du Flambeau Indian Reservation is in geographic location that is not going to or able to change. The Lac du Flambeau Band of Lake Superior Chippewa Indians has inhabited the area of the Reservation for generations, and will continue to for as long as the Tribe exists. When thinking about and considering the possibilities for renewable energy and energy independence, the Tribe must utilize the conditions and resources available on the Reservation regardless of how well a system may perform in comparison to other regions or geographical locations. The Tribe must do what it can, with what it has. Therefore the Tribe has chosen to keep an open mind in the consideration of renewable energy projects. The types of renewable energy options considered include solar, wind, biomass and geothermal.

Solar energy projects were considered for the Tribe on a facility by facility basis. The heating of water in tribal facilities is currently most often done by burning propane. The high expense and relatively low efficiency of propane for water heating has given Solar Hot Water projects a priority for tribal Facilities. Solar PV systems have also been considered for facilities. The tall trees of Lac du Flambeau often can impact the availability of the sun to reach a solar system at a particular facility, so this variable along with roof space was considered with all solar projects.

The wind speeds in Lac du Flambeau are estimated to be lower than what is currently economical for commercial wind applications. That is not to say that smaller wind power projects will not work though at certain Tribal facilities. Small

Wind projects were considered for tribal facilities that have suitable exposures for wind.

The Lac du Flambeau Reservation has a very significant biomass resource. Logging operations on Tribal lands operate at around 450 acres of logged forests annually. The logging residue and woody biomass resource associated with these logging operations has been previously estimated. Areas surrounding the reservation also contain a significant resource of woody biomass that could possibly be used as a renewable energy source for the Tribe. Facilities where a boiler system could potentially be retrofitted to burn woody biomass were considered as a part of this project.

Geothermal heating and cooling systems for existing and planned tribal facilities was also considered. The heating and cooling efficiency of utilizing geothermal systems is known to be an effective renewable resource for Lac du Flambeau. Various types of geothermal were considered based on the feasibility to retrofit existing buildings, as well as with the installation on new construction projects.

In addition to considering options related to energy efficiency and renewables, codes and policies for Tribal operations and construction were also considered as a part of the project. Administrative rules and codes were considered with regards to facility operations. New construction practices like LEED or Tribal energy efficiency codes for construction were also considered.

The use of alternative fuels for the Tribal fleet was also considered as a part of the project. Alternative motor fuels were not considered with as much priority due to the lack of local availability of such fuels. Another reason was due to the lower possibility that such endeavors would involve the production of such fuels on the Lac du Flambeau Reservation, and would therefore not have as much of an impact on or increase of Tribal energy independence.

# Pathways to 25 x 25

The Lac du Flambeau Tribe has a proven track record in successfully developing and implementing strategic plans within the community and businesses owned by the Tribe. The Tribe understands the challenges of associated with accomplishing aggressive goals and therefore has taken a dynamic approach to the achievement of having 25% of the Tribe's energy come from renewable resources by the year 2025. This dynamic approach that will be taken will allow the 25x25 plan to be a living document that may change from year to year for many different reasons. When dealing with energy issues on such a large community-wide scale, many variables may come into play when while executing particular projects whether it be equipment costs, facility conditions, utility prices, financial opportunities, and other unknowns that will be discussed further in a following section. The Tribe understands that conditions and situations constantly change, and has therefore made built this to be a dynamic plan that can also change as needed.

The Lac du Flambeau Energy Team brings expertise from many different backgrounds and fields. The Energy Team has played a significant role in developing the list of energy projects to be accomplished to reach the 25x25 goal. This project list is established with certain projects to be accomplished each year until the year 2025. The Tribe understands that these projects may change from year to year as far as what gets accomplished when, and the Energy Team will be responsible for assisting the Tribal Council in prioritizing the projects making these types of decisions as they arise annually. The Energy Team will also work to expand itself and recruit new members as needed. This will also involve continuing to work to engage Tribal leaders wherever possible, as well as to continue to gain Tribal member input.

A significant factor in creating a successful pathway to 25x25 will be funding. The Tribe has already taken a significant step in addressing this issue by establishing a Tribal Energy Improvement Fund within the Tribes FY11 General Fund Budget. The Energy Improvement Fund is likely to remain the one of the primary resources for executing the projects chosen and reaching the 25x25 goal. The Energy Team will work to utilize this funding source in an effective manner to accomplish the most significant energy improvements possible. In addition, it will be also as important to track the results of these accomplished projects and advertise the results to Tribal leaders and the community in order to maintain community support. Grant funding will also be a significant resource for accomplishing projects. Grant funds will continually be sought for funding of the chosen projects, as the Tribal Energy Improvement Fund, though significant; will most likely not be enough to fund all of the projects needed to implement the 25x25 plan.

The Tribe also understands that the concept of Tribal energy independence is more than just developing renewable energy. In order for the Tribe to truly become energy independent, the Tribe will to build the capacity within the community to execute these projects. The Tribe's Strategic Energy Plan places a significant emphasis on education of the community, and building the capacity within the community to deploy the renewable energy projects needed to accomplish the Tribe's goals. The pathway that the Tribe takes towards the 25x25 goal will also involve building the capacity within to design, install, and maintain the renewable energy systems associated with the plan. This capacity building will assist the Tribe in truly becoming an energy independent community.

As mentioned previously, the Tribe has a proven track record of developing and implementing strategic plans with success. The 25x25 Plan will be no different. The Tribe feels that for this to happen, it is important that a plan with such specific focus as 25x25 be incorporated into the Tribe's overall Strategic Plan. This may be accomplished in a variety of ways, but as the Tribe is currently in the process of readdressing its Strategic Plan, the 25x25 Plan and the objectives within will be incorporated in a fashion that the 25x25 goal will be considered when executing the big picture decisions associated with developing and implementing the Tribe's Strategic Plan.

At this particular point in time, developing and deploying renewable energy systems comes with premium financial costs. This is partially the reason why communities such as Lac du Flambeau have found themselves very dependent on outside sources and fossil fuels for their energy resources. The Lac du Flambeau Tribe has long been committed to maintaining a clean environment for many reasons including the significant cultural connection the Tribal members share with Mother Earth. As the Tribe develops its pathway to reaching the energy goal of becoming energy independent, the Tribe has made it a priority to consider not just the financial costs associated with development or improvement decisions. The environmental costs associated with making these decisions will be equally as important. Considering environmental implications in each decision that is made by the Tribe will give the Tribe an edge on creating a successful pathway to 25x25.

# **Projects Selected**

During the process of accomplishing this project and developing the 25x25 plan for energy independence, there were a significant number of activities and projects being developed for implementation within the Tribe. A new construction project associated with the Tribal Natural Resources Department began towards the end of the project year. This facility has been in the planning stage for a number of years, and a final design was developed during 2010. This particular construction project is significant to this project for a variety of reasons. The planned facility has a goal to be certified as LEED Silver by the United States Green Building Council. The building is incorporating a variety or energy efficient measures including passive solar design, high R-Value insulation, and energy efficient lighting and ventilation. The building is also installing various renewable energy systems including geothermal heating and cooling, thin-film laminate building-integrated solar PV, and solar hot water. It is hoped that this building will become a model for the community and a demonstration site with regards to sustainable construction and low-impact design. The building will house the Tribal environmental and natural resources programs including the energy and air quality program offices. The project overall will be a great first step towards accomplishing the 25x25 goal by providing a public building that deploys all of the concepts necessary for the Lac du Flambeau Tribe to accomplish the 25x25 goal.

With the assistance of the Wisconsin Office of Energy Independence on this project, the Tribe also developed educational initiatives associated with energy efficiency and renewable energy. The Tribe held the first annual "Energy Fair" on December 1<sup>st</sup> of 2010. The event included a variety of different table displays from Tribal Programs, agencies and vendors, and educational displays. There were guest speakers from Focus on Energy and UW-Madison. The event was well attended and proved to be a success. Continuing to hold this type of event annually will play a significant role in engaging the community in the Tribe's energy initiatives, and maintaining the momentum that was established within the community with this project. The Tribe also held a training on Solar Energy on February 1<sup>st</sup> of 2011. An instructor from the Midwest Renewable Energy Association gave an in-depth technical training that lasted for 8 hours and covered both solar photovoltaic systems as well as solar thermal systems. The event was a great success and had to be moved to a larger room to accommodate the amount of attendees that signed up. This training for community members was a great first step in building the capacity within the Tribe that has become a priority for accomplishing Tribal energy independence.

As a part of the overall project of developing this plan, the Tribe also received assistance from Energy Center of Wisconsin (ECW). The ECW developed a tool for the 2010 Energy Independent Pilot Communities that summarized the Tribe's energy baseline, and also provided a dynamic tool for

selecting "measures" or energy projects that will be chosen to accomplish the goal of 25x25. This tool proved to be very helpful for the Tribe by allowing the Tribe to enter specific characteristics of each project or measure such as installed costs, energy saved or produced by the system, date for implementation, measure life, etc. The tool then takes the information or characteristics of the projects entered, and provides a savings to investment ratio for analyzing each project. The tool can then calculate the progress towards accomplishing the 25x25 goal by allowing the user to turn the measure "on" or "off" and analyze the impact made by each measure on reaching the goal. This tool assisted the Tribe in selecting projects for inclusion in the 25x25 plan. This tool will continue to assist the Tribe throughout the process of implementing the 25x25 Plan. Specific changes to projects that are deployed can be modified and entered into the tool. Additionally, new projects that may arise with regard to saving or producing energy can also be entered at any time to keep track of progress or reprioritize.

As previously noted, the Tribe's energy baseline was determined to be an annual total of 72,394 MMBtus. In order to accomplish the 25x25 goal, the Tribe must deploy a combination of energy efficiency measures that reduce the Tribe's annual energy use, and renewable energy systems that will increase the amount of renewable resources that the Tribe uses for energy. The table below is a list of projects that were developed and included in the ECW tool. These measures are a combination of efficiency upgrades and renewable energy deployments. The specifics of each of the measures with regards to sizing, cost, and lifespan were all accurately estimated for each facility with the assistance of the Focus on Energy Program, contractors and engineers, and work previously accomplished by the Tribe in developing their strategic energy plan. With all of the efficiency upgrades deployed, the Tribe's overall annual energy use is reduced to 65,374 MMBtus. In order to have 25% of this energy come from renewable resources the Tribe must deploy renewable energy systems that produce 16,344 MMBtus of energy. The renewable energy projects in the table below are included in the ECW tool that the Tribe is using to help accomplish the plan to 25x25. The energy produced by the renewable energy projects selected creates a total of 17,019 MMBtus, or 26% of the Tribe's projected energy use in the year 2025, thus accomplishing the goal of 25x25. The estimated installation year for each measure is identified in the ECW tool, which is also provided the WI Office of Energy Independence, although the Tribe has placed a significant emphasis on this plan to be a dynamic and living document that can be readdressed continuously to properly assist with the Tribe's needs from year to year. The total estimated cost to the Tribe for the deployment of all the measures associated with this plan is \$4,755,354.00, which annually would cost the Tribe \$317,023.00 starting in the year 2011 and reaching the goal by 2025.

	Savings to	
Energy Project	Investment	<b>Energy Saved or</b>
	Ratio	Produced
Tribal Facility Lighting Improvements	1.96	105000 kWh
Wellness Center Solar Hot Water	0.00	1180 gallons propane
Demolish Judicial Building	6.19	73000 kWh
Vacate NR Dept Buildings	78380.00	2000 gallons propane
Casino Floor LED Lighting	22.04	366606 kWh
Demolish Campground Building	0.83	10000 kWh
Vacate Conservation Law Office	24596.00	600 gallons propane
Demolish Simpson Electric Plastics Plant	25.12	27000 gallons propane
Vacate Land Management Office	34354.00	1025 gallons propane
Tribal Facility Weatherization Projects	3.26	15000 gallons propane
LdF School SHW	1.75	2265 gallons propane
Casino SHW	0.77	1590 gallons propane
Museum SHW	0.79	115 gallons propane
Tribal Garage SHW	1.63	230 gallons propane
Abinoojiiyag SHW	0.43	12000 kWh
Planning Office Geothermal	1.81	1500 gallons propane
Post Office Geothermal	4.00	4000 gallons propane
Geothermal for Youth Center,		
Community Center, and Bingo hall	9.13	40000 gallons propane
Smoke Shop Geothermal	5.53	4000 gallons propane
Casino Wind	0.18	120000 kWh
Campground Wind	0.20	120000 kWh
Elks Point Housing Wind	0.20	60000 kWh
Casino HR/ Ed Building Geothermal	10.95	4300 gallons propane
Bearskin Circle Housing Wind	0.15	60000 kWh
Youth Center PV	0.16	12000 kWh
Casino Billboard PV	0.14	2400 kWh
Casino Billboard PV	0.14	2400 kWh
Casino Engineering Building PV	0.10	2400 kWh
Casino HR/ Ed Building PV	0.13	4800 kWh
Family Resource Center PV	0.12	4800 kWh
Food Distribution Building PV	0.13	2400 kWh
Indian Bowl PV	0.16	4800 kWh
Planning Office PV	0.14	2400 kWh
Post Office PV	0.13	2400 kWh
Tribal Garage PV	0.08	2400 kWh
Smoke Shop PV	0.14	2400 kWh
Ojibwe Market PV	0.13	2400 kWh
Wellness Center PV	0.15	2400 kWh
Museum PV	0.12	4800 kWh

2010 Wisconsin Energy Independent Community Partnership

Gas Station PV	0.12	12000 kWh
Elk Point Housing PV	0.17	12000 kWh
Casino PV	0.09	60000 kWh
Simpson Main Plant PV	0.07	36000 kWh
Bingo Hall PV	0.06	36000 kWh
Community Center PV	0.04	60000 kWh
LdF School PV	0.17	60000 kWh
LdF Grade School Biomass	665.42	50000 gallons propane
Simpson Main Plant Biomass	253.29	9000 gallons propane
Outdoor Lighting Efficiency upgrades	0.84	75000 kWh
Water and Sewer PV installations	0.12	6000 kWh
Natural Resources Building Construction	-0.19	0 therms
Natural Resources Building Geothermal	NA	3500 gallons propane
Natural Resources Building PV	0.18	7000 kWh
Natural Resources Building SHW	0.98	230 gallons propane
Liquid fuel reduction/ replacement	1.13	779 gallons diesel
Natural Resources Building PV	0.16	7000 kWh
Campground SHW	0.60	5000 kWh

# **Potential Renewable Feedstocks**

As previously mentioned, the Lac du Flambeau Indian Reservation has a significant woody biomass resource. The logging operations in and around the reservation have the potential to provide a significant feedstock of renewable fuel to the Lac du Flambeau Tribe and its operations. As a part of the Tribe's Strategic Energy Plan, the Tribe conducted a resource assessment for this woody biomass resource. The findings summarized logging waste totals from existing logging operations within and around the reservation, as well as potential amounts that could possibly be utilized if it was determined feasible.

The Tribal Strategic Energy Plan has a goal: "To increase Lac du Flambeau energy independence by utilizing local, renewable energy resources". Within this goal the Tribe includes the following objectives:

- Develop a Forestry wood chip program that creates jobs and enhances biomass resources by removing usable biomass from forest from timber sales, timber stand improvement projects, or other sources.
- Coordinate with other agencies to evaluate other potential local resources of biomass such as State and Federal lands, as well as private forests.
- > Utilize local biomass for development of a pellet mill to provide a clean and efficient resource to heat Tribal facilities and homes.
- Develop a centrally located combined heat and power plant that utilizes biomass for electricity production and distribution of heat in to Tribal facilities and homes.

The Tribe's objectives with regard utilizing the woody biomass feedstock could obviously assist in the Tribe reaching its 25x25 goal for energy independence. The Tribe plans to further assess the feasibility of such objectives with regards to biomass in the coming years.

# **Existing Unknowns – Necessary Information for the Future**

## **Funding**

In analyzing the total projects identified for reaching the 25x25 goal, the first and foremost concern is: "where is the money going to come from to pay for this all?" The concern of funding is always a significant when creating a plan. As previously mentioned, the Tribe recently established a Tribal Energy Improvement Fund for addressing the energy issues within Tribal facilities, and also deploying renewable energy system. This program was funded at a level of \$249,000.00 for FY11. It is hoped that with the success of these initial projects and the financial savings realized by the Tribe, that this funding amount will stay consistent or possibly increase. The Tribe has also been very fortunate by having success in securing grant funding for projects. It is unknown whether or not these financial incentives will continue to be available, but as long as they are the Tribe will seek funding assistance wherever possible.

# **Energy Technology and Pricing**

Another significant unknown in planning for energy independence is the technological advancements of energy systems. The efficiency of solar and wind could potentially have a significant impact on the availability of those resource to the Lac du Flambeau Tribe for energy. Other technologies such as lighting and HVAC may also advance significantly in coming years and impact the projects selected for deployment within the plan. The prices of these technologies are also unknown. Changes in the price of wind and solar technologies will without doubt impact the execution of the 25x25 plan. The other price change that is unknown is that from the existing utilities. As the retail price of electricity, liquid propane, and other fuels may significantly rise in the coming years, the deployment of renewable energy systems could be much more financially attractive than at the present time.

#### Population/Demographical Changes

Another unknown factor that may affect the energy efforts of the Tribe is population and demographics. Currently, the Lac du Flambeau Reservation is somewhat stable. If this were to change in coming years, this could have an impact on not only the future energy loads of the Tribe, but also the funding of the Tribal initiatives like energy projects.

# **Action Steps: Immediate and Long-Term**

#### **Immediate**

Action steps that can be taken immediately to work towards the accomplishment of the 25x25 plan include a variety of activities. The first step is to continue to meet with the Energy Team on a monthly basis. As previously stated, the Energy Team will continue to play a significant role in the execution of the 25x25 plan. The expertise brought to these meetings is something that can and should be taken advantage of wherever possible with regards to the 25x25 plan.

Another immediate action step is to begin to deploy the projects that received funding from the Tribe in the Tribal Energy Improvement Program. Included for 2011 is to install a reservation-wide indoor lighting improvement project which will replace all of the remaining fluorescent T12 lighting that exists and replace it with high performance T8 and T5 lighting that runs significantly more efficient. Additionally, the Tribe has chosen to install solar hot water at both the Lac du Flambeau Wellness Center and the newly constructed Lac du Flambeau Tribal Natural Resources Complex. A solar PV system will also be installed immediately at the Lac du Flambeau Tribal Natural Resources Department Complex.

The Energy Team will also immediately begin to consider possibilities for next year's funding of projects. The projects contained within the ECW tool will be discussed at Energy Team Meetings, and a funding plan for the FY12 Tribal Energy Improvement Program will be created for presentation to the Tribal Council during the budgeting process.

The Chippewa Housing Authority is also beginning work on a multi-facility weatherization and efficiency upgrade that will reduce the energy use of various CHA facilities.

## Long-Term

As previously mentioned, it will be a goal for the Tribe to incorporate the 25x25 plan into the overall Strategic Plan for the Tribe. As the Tribe works to update the Strategic Plan in the coming years, the Energy Team will work to include the 25x25 Plan, or portions of it into the Tribe's overall Strategic Plan.

The Tribe will also over the long-term continue to seek funding for projects through any sources that are available. This includes the Tribal General Fund, Focus on Energy, and other outside grant resources for feasibility studies or system

deployment. Acquiring necessary funding will be critical in the long-term for the deployment of the projects outlined in this plan.

Additionally, the Tribe's Strategic Energy Plan will continue to be implemented. A significant portion of that plan is to work to educate and build capacity in the community. The Tribe will plan on continuing to host an annual energy fair. It is hoped to be able to somehow engage the youth more into this event and partner with the local schools on energy education projects. The Tribe will also seek additional opportunities to host technical trainings similar to the solar training that was held in Lac du Flambeau as a part of this project.

# **Energy Independence Team Members**

- Bryan Hoover, Lac du Flambeau Tribal Energy Program Coordinator
- Brian Gauthier, CNRED Educator / Department Head LdF Tribal UWEX
- Bill Guelcher, CEO Lake of the Torches Resort Casino
- Len Fralick, Lac du Flambeau Tribal GIS / Transportation Coordinator
- Larry Wawronowicz, Lac du Flambeau Tribal Natural Resources Director
- Emerson Coy, Lac du Flambeau Tribal Planning Director
- Dan Tannah, Wisconsin Public Service Corporation
- Tim Hintz, Wisconsin Public Service Corporation

The Lac du Flambeau Energy Team has played a significant role in the development of this 25x25 plan for energy independence. In order for this team to maintain success in implementing the plan, the team will continually seek new members that may be able to play a role in accomplishing the Tribe's energy goals. The recruitment or engagement of Tribal leaders in the functions of this team will most likely be a key to the success of the plan; therefore the team will work to engage these individuals to be a part of the team's function.

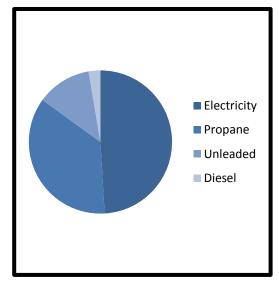
# <u>Appendix: Baseline Energy Consumption Data – Spreadsheets</u>

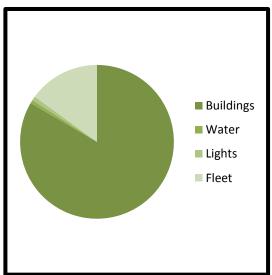
# **Baseline Data and Goals**

Your energy usage baseline is	72,394	Million (MM) Btus.*
That baseline is comprised of	10,410,856	kWh,
	283,862	gallons of propane,
	203,002	ganons or proparicy
	72,084	gallons of unleaded,
and	13,902	Gallons of diesel.
By assuming an annual growth rate of	0.00%	
in 2025 your energy use baseline will be	72,394	MMBtu.
Your 25% renewable energy goal		
for 2025 is therefore	18,099	MMBtu,
or	25%	
This translates into	5,304,391	kWh or
	197,583	gallons propane or
	145,956	gallons gas or
	130,206	gallons diesel, or
		some combination
		of those fuels.

# Energy Analysis 1

Total Consumption by Energy Type		Total Consumption by End Use		
Energy type	Percent of total Btus		Energy end use	Percent of total Btus
Electricity	49%		Buildings	83%
Propane	36%		Water	1%
Unleaded	12%		Lights	1%
Diesel	3%		Fleet	15%





# **Environmental Impact**

Total CO2 Emissions by Energy Type				
Energy type	Percent of total CO2			
Electricity	77%			
Propane	16%			
Unleaded	6%			
Diesel	1%			
		Total:	23 million lbs CO2	

